

What is claimed:

- 1.) (Currently Amended) A [[P]]probe (100) for the measurement of the oxygen activity of metal melts, in particular steel melts,
comprising a reference substance (2) in electrically conducting contact (3) with a measuring device;
and comprising a solid electrolyte predominantly oxygen ion conducting at high temperatures and negligibly electron conducting and separating the reference substance (2) from the melt and having an entry surface (4) for oxygen ions in contact with the melt,
wherein the entry surface (4) of the probe ready for operation is covered by a functional foil arrangement (10,20) in close contact to the entry surface(4).
- 2.) (Currently Amended) The [[P]]probe according to claim 1, wherein the foil arrangement (10,20) comprises at least one foil (6) oxidizable by the oxygen contained in the melt.
- 3.) (Currently Amended) The [[P]]probe according to claim 2, wherein the foil (6) consists ~~out~~
~~of an aluminum material.~~
- 4.) (Currently Amended) The [[P]]probe according to ~~any of the~~ claim[[s]] ~~1 to 3~~ 2, wherein
the foil arrangement (20) comprises at least a further foil (9) at least partly covering the first foil.

- 5.) (Currently Amended) The [[P]]probe according to claim 4, wherein the material of the further foil when melting due to the contact with the melt enhances the wettability of the entry surface (4) of the solid electrolyte (11).
- 6.) (Currently Amended) The [[P]]probe according to claim 5, wherein the further foil (9) consists ~~out~~ of a copper material.
- 7.) (Currently Amended) The [[P]]probe according to ~~any of the~~ claim[[s]] 1 ~~to~~ 6, wherein the solid electrolyte is provided in form of a material having a substantially flat end wall at the end of a refractory small tubelet and the foil arrangement (10, 20) extends in front of said end wall.
- 8.) (Currently Amended) The [[P]]probe according to ~~any of the~~ claim[[s]] 1 ~~to~~ 7, wherein the solid electrolyte is provided in form of a small tubelet (1) to be immersed into the melt and closed at the end to be immersed with the reference substance (2) being located in the interior of the small tubelet and that the foil arrangement (10,20) totally and tightly surrounds the outer periphery of the small tubelet.
- 9.) (Currently Amended) The [[P]]probe according to ~~any of the~~ claim[[s]] 1 ~~to~~ 8, further comprising means to keep the foil arrangement (10,20) in close contact to the entry surface (4).

- 10.) (Currently Amended) The [[P]]probe according to claim 9, wherein said means comprise a binder located between the entry surface (4) and the foil arrangement (10,20) and disintegrating when in contact with the melt .
- 11.) (Currently Amended) The [[P]]probe according to claim 10, wherein said means are mechanical means, which press the foil arrangement (10,20) from outside into close contact with the entry surface (4).
- 12.) (Currently Amended) The [[P]]probe according to claim 11, wherein said means press the foil arrangement (10,20) against the entry surface (4) over its extension.
- 13.) (Currently Amended) The [[P]]probe according to claim 12, wherein said means push press the foil arrangement (10,20) against the entry surface (4) in an elastic way.
- 14.) (Currently Amended) The [[P]]probe according to claim 13, wherein said means comprise an elastomeric hose (8,18) tightly surrounding the foil arrangement (10,20) on the outer periphery of the small tubelet (1) constituting the solid electrolyte.
- 15.) (Currently Amended) The [[P]]probe according to claim 14, characterized in that the hose (8,18) first has a greater diameter than the foil arrangement (10,20) surrounding the small tubelet (1) and that the hose is shrinkable in its radial diameter after being positioned longitudinally over the foil arrangement (10,20).

16.) (Currently Amended) The [[P]]probe according to claim 15, wherein the hose (8,18) is made of a material with a thermoactive shape memory.

17.) (Currently Amended) A [[M]]method of producing a probe (100,200) for the measurement of oxygen activity of metal melts, in particular steel melts, with the probe comprising a[[n]] solid electrolyte predominantly oxygen conducting at high temperatures and negligibly electron conducting and intended to be immersed into the metal melt and having an entry surface for oxygen ions, characterized in that the entry surface (4) is tightly covered by a functional foil arrangement (10,20); that over the foil arrangement (10,20) on the entry surface (4) an elastomeric hose (8,18) is positioned longitudinally and that then the hose (8,18) is shrunk onto the foil arrangement (10,20) causing a radial tension leading to a close contact between the foil arrangement (10,20) and the entry surface (4).

18.) (Currently Amended) The [[M]]method according to claim 17, wherein the hose (8,18) is made out of a thermoactive shape memory material and the hose (8,18) is heated when in position.

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